Aair = specific weight of air=l kg 29 per cubic meter;
A_{gaa} = weight of gases at combustion-chamber temperature;
in this case 2=1200 and 1.29^-l+a* = 0 kg 239;
K<o = area of orifice in square meters;
KI = coefficient of contraction of the jet, or the ratio between the area of the contracted vein and o> (in hydraulics, the contracted vein for a circular orifice is about 0.67co);
K2=velocity coefficient, or the ratio between the actual velocity in the contracted vein and the theoretical velocity (in hydraulics, the velocity in the contracted vein is about 0.970).

KI and /C2 have not been accurately determined for gases. For the case in hand they may be assumed as equal to unity, and the formula becomes, for the particular case,

$$25.67 = lXlXco_A/19.62X13.6\ 0\ X\ * = 0m^2749.$$

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The velocity through the orifice will be

$$25.67 \text{ -T- } 0.749 = 34 \text{ m } 27 \text{ per second.}$$

A combustion chamber of this kind might be constructed in an old stove, but it would be difficult to maintain with dirty gas. The furnace dust has a fluxing tendency upon the brickwork and in many cases forms a heavy deposit. Mr. R. J. Wysor, in his discussion of Mr. Boynton's paper, presented some interesting photographs showing the fluxing action experienced in certain furnaces at South Bethlehem. The fume at these furnaces is high in alkali.

The stove tested was provided with three chimney valves, being operated in some runs with all three and in others with only two. The valves were 20.5 inches in diameter, giving an area of 0 m^2 212 each. The average temperature at the chimney valve was about 280°. The volume of gas flowing per

second,
$280=4.75X1+0^ = 9 ni^{3} 63; therefore the velocities would be

with 3 valves, v = 9 63 ^ ' $_{21}$2 = 15 m 10 Per second,

with 2 valves, v= 9 63 ' = 23 m ^ per seconc*-